

**REMARKS**

**Petition for Extension of Time Under 37 CFR 1.136(a)**

It is hereby requested that the term to respond to the Examiner's Action of November 26, 2007 be extended two months, from February 26, 2008 to April 26, 2008.

Authorization to charge a Credit Card is given to cover the extension fee. The Commissioner is hereby authorized to charge any additional fees associated with this communication to Deposit Account No. 19-5425.

In the Office Action, the Examiner indicated that claims 1 through 15 are pending in the application and the Examiner rejected all of the claims.

**Rejections under 35 U.S.C. §§102 and 103**

On page 2 of the Office Action, the Examiner rejected claims 1-6, 10, and 12-15 under 35 U.S.C. §102(b) as being anticipated by U.S. Patent No. 5,770,893 to Youlton. Also on page 2, the Examiner rejected claims 1-6, 10, and 12-15 under 35 U.S.C. §102(b) as being anticipated by U.S. Patent No. 4,123,185 to Hagen et al.

On page 3 of the Office Action, the Examiner rejected claims 7-9 and 11 under 35 U.S.C. §103(a) as being unpatentable over Youlton.

**The Present Invention**

The claimed invention provides a wave energy device in the form of heave-resistant vessel comprising two or more flow paths into which water can be urged by wave action and an energy extractor in fluid communication with the path(s) and arranged to extract energy from air movements in the path(s) caused by the wave action.

The MPEP and case law provide the following definition of anticipation for the purposes of 35 U.S.C. §102:

"A claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference." (*Verdegaal Bros. v. Union Oil Co. of California*, 814 F.2d 628, 631 (Fed. Cir. 1987) M.P.E.P. §2131.

Further:

To support a rejection under 35 U.S.C. §103, a reason, suggestion, or motivation to lead an inventor to combine two or more references must be found. *Pro-Mold and Tool Co. v. Great Lakes Plastics Inc.*, 37 U.S.P.Q.2d 1627, 1629 (Fed.Cir. 1996). The Examiner has not met his burden in establishing a reason, suggestion, or motivation for combining the cited references.

**The Examiner Has Not Established**  
**a Prima Facie Case of Anticipation nor Obviousness**

As noted above, the claimed invention provides a wave energy device in the form of a heave-resistant vessel. Youlton does not teach or suggest a heave-resistant vessel. In fact, Youlton must heave (i.e. rise and fall with the waves) in order to operate properly. The Youlton device is explicitly described as heaving – i.e. rising and falling with the waves:

"FIG 1 also shows a floating tube 13 having a float 14....As the tube 13 rises on the crest of a wave....Continuous rising and falling of the tube 13 on a wave 10 therefore results in an air column which oscillates relative to the tube." (Col. 2 line 51 to Col. 3 line 12)

Clearly, Youlton not only has no disclosure or suggestion of any kind of heave-resistance, it explicitly teaches away from heave-resistance. Youlton, in fact, requires the device to rise and fall in order to operate properly, for the following reason: The long datum tube 13 in Youlton is described in Claim 1 as being "disposed below the effective wave

base". As the device rises and falls due to wave action, the water within the datum tube is intended to remain stationary with reference to the surrounding water and the device itself. It is intended that this heaving action of the device generates an increased pressure difference across an air turbine positioned between the inverted cup member and the datum tube.

Because Youlton has to heave in order to operate as intended, it does not teach the claimed invention, and thus does not anticipate the claimed invention. Further, since Youlton teaches away from the claimed invention, Youlton does not render the present invention obvious.

Similarly, Hagen also lacks any teaching or suggestion of heave resistance. It is clearly a *free floating* structure, as is apparent from Figure 2, in which the floating platforms of the device are shown at 11; mooring lines 13b connect these floating platforms to a floating monobuoy 14. So Hagen, like Youlton, explicitly teaches away from heave-resistance.

Also, the Hagen device is meant to operate as a breakwater and mooring platform:

"The breakwater comprises a pair of joined floating spread wings between which a vessel can be moored". (Col. 2 lines 12 – 13)

But if this device's vertical movement were restricted, i.e. if it were made heave-resistant, then that would compromise its effectiveness as a breakwater because high waves would simply pass over the top of the platforms, defeating its function as a breakwater. Further, off-shore mooring platforms for large vessels like tankers are invariably free floating and not heave-resistant; this is because a heave-resistant structure is most commonly made heave-resistant by being tethered to the sea floor with cables. But that severely restricts not only their vertical movement, but also their lateral movement. A large vessel, even at anchor,

can move significantly, because of the forces associated with waves and wind; it is standard for a mooring platform to have some freedom of movement under those wave and wind forces so that the mooring platform and vessel can move together.

So in Hagen, not only is there no disclosure or suggestion of heave-resistance, it explicitly teaches away from heave-resistance. Like Youton, Hagen requires the device to rise and fall with the waves in order to operate properly. So Hagen neither anticipates nor renders obvious the claimed invention.

In addition, Hagen also lacks any teaching of having different draughts that tune the system to resonate at different wave *periods*; it instead suggests that the different draughts are tuned to work at different wave 'sizes':

"The wave energy collecting cells vary in depth for various wave *sizes*" (Col. 2, lines 23 – 24).

The term "sizes" is used in this field to refer to *height*, and *not* period. Wave height is not correlated with wave period. Evidence for this established construction of the term "size" can be seen in the Wikipedia definition of "Significant wave height" at [http://en.wikipedia.org/wiki/Significant\\_wave\\_height](http://en.wikipedia.org/wiki/Significant_wave_height):

"A related notation,  $H_n$ , where  $n$  is a percentage or a fraction, describes the wave **height** of the  $n$ th percent highest waves.[4]  $H_n$  is used to estimate the average maximum wave **size** ( $H_{0.99}$ )"

This clearly demonstrates that wave height and size are used interchangeably.

Tuning the size of energy collectors across a spectrum of wave size is a completely different approach to tuning across a spectrum of wave periodicity; the underlying assumptions about how to optimize energy extraction are wholly different. It would not be

anticipated or obvious to modify a design tuned to work across a spectrum of wave size to one tuned to work across a spectrum of wave periodicity.

In view of the above, independent claim 1, and all claims depending therefrom (claims 2-15), are patentable over both Youlton and Hagen. The Examiner is respectfully requested to reconsider and withdraw the rejection of the claims under 35 U.S.C. §§ 102 and 103.

**Conclusion**

The present invention is not taught or suggested by the prior art. Accordingly, the Examiner is respectfully requested to reconsider and withdraw the rejection of the claims. An early Notice of Allowance is earnestly solicited.

The Commissioner is hereby authorized to charge any fees associated with this communication to applicant's Deposit Account No. 19-5425.

Respectfully submitted

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Date

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